UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,716	08/28/2001	Kazushige Yonenaga	011070	2708

23850 7590 05/21/2007

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER	
LEUNG, WAI LUN	

ART UNIT	PAPER NUMBER
2613	

MAIL DATE	DELIVERY MODE
05/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/939,716	Applicant(s) YONENAGA ET AL.	
	Examiner Danny Wai Lun Leung	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14,15 and 17-19* is/are rejected.

7)☒ Claim(s) *13 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 5,543,952 to **Yonenaga** et al.

Regarding to claim 1, **Yonenaga** discloses an optical transmitter (fig 1b) comprising:

an input terminal (col 3, ln 34) for accepting an electrical binary signal (col 3, ln 35),

bandwidth restriction means for restricting bandwidth of said electrical binary signal (col 4, ln 14-16),

an electrical-optical conversion means for converting said electrical signal which is bandwidth restricted by said bandwidth restriction means to an optical signal (col 3, ln 37-45).

Yonenaga does not disclose expressly having an amplifier for amplifying an input signal of said electrical-optical conversion means so that said input signal has enough level for operating said electrical-optical conversion means, and wherein said bandwidth restriction means locates between an output of said amplifier and an input of said electrical-optical conversion means.

However, Examiner takes official notice that it is common and well known to place an amplifier along a transmission medium in order to restore signal strength. As it is well

recognized that signals degrade as they travel through a transmission medium, it would have been obvious to put amplifiers along any points of a transmission system or medium, such as at the input of **Yonenaga's** electrical-optical conversion means or bandwidth restriction means, in order to restore signal strength, so that **Yonenaga's** input signal has enough level for operating said electrical-optical conversion means.

Regarding to claim 2, **Yonenaga** discloses an optical transmitter wherein a precoding means (80, fig 1B) is provided at an input stage, said precoding means provides a binary output which is the same as the previous output when an input binary digital signal is 0, and an output which differs from the previous output when an input digital signal is 1 (col 5, ln 59-65), and said bandwidth restriction means is a low- pass filter which generates a ternary duobinary signal (75b, fig 1B; col 6, ln 50-54).

Regarding to claim 3, **Yonenaga** discloses an optical transmitter wherein said electrical-optical conversion means provides the maximum level of optical output for an input electrical signal having the maximum level and the minimum level (col 9, ln 23-32), the minimum level of optical output for an input electrical signal having middle level between said maximum level and said minimum level (col 9, ln 23-32), and optical phase of said maximum level of said optical signal is opposite of optical phase of said minimum level of said optical signal (col 9, ln 29).

Regarding to claim 4, **Yonenaga** discloses an optical transmitter wherein said electrical-optical conversion means is a Mach Zehnder light intensity modulator having a pair of electrodes which are driven by ternary electrical duobinary signals having opposite polarities (col 8, ln 32-39).

Regarding to claim 5, **Yonenaga** discloses an optical transmitter wherein at least two of said bandwidth restriction means, and said electrical-optical conversion means are integrated in a single module (fig 1B, where everything is in one module). Since it is common and well known to place amplifiers anywhere along a communication link in order to restore signal strength, it would have been obvious to incorporate such amplifier in the module as well, so that such integrated single module has enough signal strength to operate properly.

3. Claims 6-7, 9, 14, 15, 17, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 5,543,952 to **Yonenaga** et al, as applied to claims 1 and 5 above, in view of US Patent Number 5,644,664 to **Burns** et al.

Regarding to claim 6, **Yonenaga** discloses an optical transmitter in accordance to claim 5 contains electrical-optical conversion means, but does not disclose expressly that the electrical-optical conversion means has function as bandwidth restriction means. **Burns**, from the same field of endeavor, discloses an optical transmitter contains electrical-optical conversion means that has function as the bandwidth restriction means (col 9, ln 38-39). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate **Burns**' electrical-optical conversion means that has function as bandwidth restriction means with **Yonenaga**'s optical transmitter in order to restrict bandwidth by using the electrical-optical conversion means without additional filtering components in the system such that the size and cost of the transmitter could be lowered.

Regarding to claim 7, **Yonenaga** discloses an optical transmitter (fig 1B) comprising:

an input terminal (col 3, ln 34) for accepting an electrical binary signal (col 3, ln 35),

an electrical-optical conversion means (col 3, ln 37-45) for converting an electrical signal to an optical signal.

Yonenaga further teaches wherein said electrical-optical conversion means has a traveling wave type electrode *(70, fig 1B)* designed so that phase change of optical wave propagating in optical waveguide depending upon electrical field has waveforms of a ternary duobinary signal *(fig 12F)*.

Yonenaga does not disclose expressly having an amplifier for amplifying an input signal applied to the input terminal to level requested for operating an electrical-optical conversion means, and applying the amplified electrical signal to the electrical-optical conversion means. However, Examiner takes official notice that it is common and well known to place an amplifier along a transmission medium in order to restore signal strength. As it is well recognized that signals degrade as they travel through a transmission medium, it would have been obvious to put amplifiers along any points of a transmission system or medium, such at the input terminal of **Yonenaga's** system to amplify an input signal, in order to restore signal strength so that **Yonenaga's** input signal has enough level for operating said electrical-optical conversion means.

Yonenaga does not disclose expressly that the electrical-optical conversion means have a traveling wave type electrode operating to restrict bandwidth of an output light of the electrical-optical conversion means.

Burns, from the same field of endeavor, discloses an electrical-optical conversion means having a traveling wave type electrode operating to restrict bandwidth of an output light of an electrical-optical conversion means (col 4, ln 16-33). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate **Burns**' electrical-optical

conversion means with **Yonenaga**'s optical transmitter in order to restrict bandwidth by using the electrical-optical conversion means without additional filtering components in the system such that the size and cost of the transmitter could be lowered.

Regarding to claim 9, 15, and 19, the combination of **Yonenaga** and **Burns** teaches an optical transmitter according to claim 6 or claim 7 as discussed above. **Yonenaga** further teaches that the electrical-optical conversion means is a Mach Zehnder light intensity modulator having a traveling wave type electrode (col 8, ln 31-39). **Burns** further teaches that the bandwidth of optical output of the mach Zehnder light intensity modulator is restricted by using mismatching of phase velocity of electric wave (col 9, ln 38-39) propagating the traveling wave type electrode and optical wave propagating in an optical waveguide having refractive index depending upon electrical field generated by the electric wave (col 12, ln 16-27). As to claims 15 and 19, **Burns** further teaches wherein said Mach Zehnder light intensity modulator is provided on a substrate of X-cut Lithium-Niobate (col 11, ln 7).

Regarding to claim 14, **Burns** further teaches an optical transmitter in accordance to claim 9, wherein said Mach Zehnder Light intensity modulator is provided on a substrate of Z-cut Lithium-Niobate (col 11, ln 7).

Claim 17 is rejected for the same reasons as stated above regarding claim 9, because in addition to the limitations in claim 9, **Burns** further teaches wherein modulation efficiency of said Mach Zehnder light intensity modulator at lower frequency is always larger than that at frequency higher frequency *(col 13, ln 34-52)*. **Burns** does not expressly teaches that the lower frequency is f0/2 and that the higher frequency is higher than that of f0/2, where f0 is clock frequency of said electrical binary signal. However, it is common and well known to a person of

ordinary skill in the art that the lowest possible sampling frequency without any data loss is at f0/2, where f0 is a clock frequency. Therefore, it would have been obvious to recognize that **Burns'** modulation efficiency of said Mach Zehnder light intensity modulator at f0/2 is always larger than that at frequency higher than f0/2, Where f0 is clock frequency of said electrical binary signal in the combination of **Yonenaga and Burns**. The motivation would have been to achieve the most efficiency by using the lowest possible frequency at f0/2 according to a common and well known theory such as Nyquist's criteria.

Claims 18 and 21 are rejected for the same reasons as stated above regarding claim 9, because in addition to the limitations in claim 9, **Yonenagas** further teaches a precoding means *(80, fig 1B)* provides an output which is the same as the previous output when an input binary digital signal is 0, and an output which differs from the previous output when an input digital signal is 1 *(fig 10, Data signal as input, precoded signal is the output)*, and said traveling wave type electrode is designed so that phase change of optical wave propagating in said optical waveguide depending upon said electrical field has waveforms of a ternary duobinary signal *(fig 12F)*.

Although **Yonenagas** does not expressly teaches providing said precoding means at an input stage of an amplifier, Examiner takes official notice that it is common and well known to place an amplifier along a transmission medium in order to restore signal strength. As it is well recognized that signals degrade as they travel through a transmission medium, it would have been obvious to put amplifiers along any points of a transmission system or medium, such as to the output of **Yonenagas'** precoding means, such that said precoding means is provided at an

input stage of an amplifier, to ensure that the signal strength of the precoded signal is strong enough to carry the necessary precoded information.

It would have been obvious to combine **Yonenaga and Burns** for the same reason as stated above regarding claim 9.

4. Claims 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 5,543,952 to **Yonenaga** et al, in view of US Patent Number 5,644,664 to **Burns** et al., as applied to claims 1 and 7 above, and further in view of "Modeling and Optimization of Traveling-Wave $LiNbO_3$ Interferometric Modulators" by Chung et al, IEEE Journal of Quantum Electronics, Vol 27, No 3, March 1991.

Regarding to claim 8, the combination of **Yonenaga** and **Burns** discloses the optical transmitter in accordance to claims 1 and 7 as discussed above. It does not disclose expressly wherein the bandwidth of optical output of said Mach Zehnder light intensity modulator is restricted by using loss of said traveling wave type electrode. Chang, from the same field of endeavor, teaches an electrical-optical conversion means is a Mach Zehnder Light intensity modulator having a traveling wave type electrode *(page 612, section III)*, and bandwidth of optical output of said Mach Zehnder light intensity modulator is restricted by using loss of said traveling wave type electrode *(page 613, sections A describes relationships between loss of traveling wave type electrode and its bandwidth; section B describes its parameters being used to drive the modulator)*. Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to implement Chang's technique to restrict bandwidth of optical output of said Mach Zehnder light intensity modulator by using loss of said traveling wave type

electrode onto the combination of **Yonenaga** and **Burns**' system as taught by Chang. The motivation for doing so would have been to be able to simplify optimization procedures by determining the set of parameters that will satisfy the given bandwidth requirement to restrict bandwidth of optical output of said Mach Zehnder light intensity modulator by using loss of said traveling wave type electrode *(Chang, page 616, section V)*.

Claims 10 and 22 are rejected for the same reasons as stated above regarding claim 8, because in addition to the limitations in claim 8, **Yonenaga** further teaches a precoding means *(80, fig 1B)* provides an output which is the same as the previous output when an input binary digital signal is 0, and an output which differs from the previous output when an input digital signal is 1 *(fig 10, Data signal as input, precoded signal is the output)*, and said traveling wave type electrode is designed so that phase change of optical wave propagating in said optical waveguide depending upon said electrical field has waveforms of a ternary duobinary signal *(fig 12F)*.

Although **Yonenagas** does not expressly teaches providing said precoding means at an input stage of an amplifier, Examiner takes official notice that it is common and well known to place an amplifier along a transmission medium in order to restore signal strength. As it is well recognized that signals degrade as they travel through a transmission medium, it would have been obvious to put amplifiers along any points of a transmission system or medium, such as to the output of **Yonenagas**' precoding means, such that said precoding means is provided at an input stage of an amplifier, to ensure that the signal strength of the precoded signal is strong enough to carry the necessary precoded information.

It would have been obvious to combine **Yonenaga, Burns,** and **Chung** for the same reason as stated above regarding claim 8.

As to claim 11, **Yonenaga** further teaches wherein said electrical-optical conversion means provides the maximum level of optical output for an input electrical signal having the maximum level and the minimum level *(first electrical input "0" and 3rd electrical input "2" as shown in fig 12D, result in a maximum level of optical output "intensity 1" as shown in fig 12F)*, the minimum level of optical output for an input electrical signal having middle level between said maximum level and said minimum level *(2nd electrical input "1" as shown in fig 12D, result in a minimum level of optical output "intensity 0" as shown in fig 12F)*, and optical phase relating to said maximum level of said optical signal is opposite of optical phase relating to said minimum level of said optical signal *(fig 12F shows "π" and "0" as the respective phase, which are opposite).*

As to claim 12, **Yonenaga** further teaches wherein said electrical-optical conversion means is a Mach Zehnder Light intensity modulator *(70, fig 1B)* having a pair of electrodes *(74a & b, fig 1B)*, and electrical signals applied to each electrodes are binary signals having opposite polarities with each other *(note that inverter 11, fig 1B makes the electrical signals having opposite polarities with each other, these signals are also illustrated in fig 12A & 12B)*. **Chung** further teaches each of the electrodes in a Mach Zehnder Light intensity modulator is a traveling wave type electrode having bandwidth restriction property *(page 613, sections A describes relationships between loss of traveling wave type electrode and its bandwidth; section B describes its parameters being used to drive the modulator).*

5. Claim 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 5,543,952 to **Yonenaga** et al, in view of US Patent Number 5,644,664 to **Burns** et al., as applied to claims 1 and 7 above, and further in view of **applicant's admission** on page 14-16 of in reply filed 5/8/2006.

Regarding to claim 8, the combination of **Yonenaga** and **Burns** discloses the optical transmitter in accordance to claims 1 and 7 as discussed above. It does not disclose expressly wherein said bandwidth of optical output of said Mach Zehnder light intensity modulator is restricted by using loss of said traveling wave type electrode. However, **applicant admitted** that it is common and well known to use an electrical-optical conversion means such as a Mach Zehnder Light intensity modulator having a traveling wave type electrode to restrict bandwidth of optical output of said Mach Zehnder light intensity modulator by using loss of said traveling wave type electrode. Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to restrict bandwidth of optical output of said Mach Zehnder light intensity modulator by using loss of said traveling wave type electrode onto the combination of **Yonenaga** and **Burns**' system as taught by applicant's admission. The motivation for doing so would have been to be able to simplify optimization procedures by determining the set of parameters that will satisfy the given bandwidth requirement to restrict bandwidth of optical output of said Mach Zehnder light intensity modulator by using loss of said traveling wave type electrode.

Claim 10 is rejected for the same reasons as stated above regarding claim 8, because in addition to the limitations in claim 8, **Yonenaga** further teaches a precoding means *(80, fig 1B)* provides an output which is the same as the previous output when an input binary digital signal is

0, and an output which differs from the previous output when an input digital signal is 1 *(fig 10, Data signal as input, precoded signal is the output)*, and said traveling wave type electrode is designed so that phase change of optical wave propagating in said optical waveguide depending upon said electrical field has waveforms of a ternary duobinary signal *(fig 12F)*.

Although **Yonenagas** does not expressly teaches providing said precoding means at an input stage of an amplifier, Examiner takes official notice that it is common and well known to place an amplifier along a transmission medium in order to restore signal strength. As it is well recognized that signals degrade as they travel through a transmission medium, it would have been obvious to put amplifiers along any points of a transmission system or medium, such as to the output of **Yonenagas'** precoding means, such that said precoding means is provided at an input stage of an amplifier, to ensure that the signal strength of the precoded signal is strong enough to carry the necessary precoded information.

It would have been obvious to combine **Yonenaga, Burns,** and **Applicant's admission** for the same reason as stated above regarding claims 1, 7, and 8.

As to claim 11, **Yonenaga** further teaches wherein said electrical-optical conversion means provides the maximum level of optical output for an input electrical signal having the maximum level and the minimum level *(first electrical input "0" and 3rd electrical input "2" as shown in fig 12D, result in a maximum level of optical output "intensity 1" as shown in fig 12F)*, the minimum level of optical output for an input electrical signal having middle level between said maximum level and said minimum level *(2nd electrical input "1" as shown in fig 12D, result in a minimum level of optical output "intensity 0" as shown in fig 12F)*, and optical phase relating to said maximum level of said optical signal is opposite of optical phase relating to said

minimum level of said optical signal *(fig 12F shows "π" and "0" as the respective phase, which are opposite).*

Response to Arguments

6. Applicant's arguments filed 3/12/2007 have been fully considered but they are not persuasive.

The Official Notice, presented in the last Office action, paper number 20061130, concerning it is common and well known to place an amplifier along a transmission medium in order to restore signal strength. As it is well recognized that signals degrade as they travel through a transmission medium, it would have been obvious to put amplifiers along any points of a transmission system or medium, such as at the input of **Yonenaga's** electrical-optical conversion means or bandwidth restriction means, in order to restore signal strength, so that **Yonenaga's** input signal has enough level for operating said electrical-optical conversion means is maintained.

*US Patent Number 6,415,003 to **Raghavan**, US Patent Number 6,556,328 to **Tanaka**, and US Patent Number 6,728,277 to **Wilson** are all individually cited herein as evidence to support examiner's taking of Official Notice.*

*In col 6, ln 16-22, **Raghavan** clearly teaches that one of ordinary skill in the art will recognize that amplifier may be located anywhere in an apparatus where signal amplification is needed.*

*In fig 1, **Tanaka** illustrates having an amplifier (9) for amplifying an input signal (Es) of an electrical-optical conversion means (LD1), and a bandwidth restriction means (BPF1)*

locates between an output of said amplifier (9) and an input of said electrical conversion means (LD1).

In fig 2, ***Wilson*** *illustrates having an amplifier (DC coupled) for amplifying an input signal (Ve) of an electrical-optical conversion means (12), and a bandwidth restriction means (LPF 26) locates between an output of said amplifier (DC coupled) and an input of said electrical conversion means (12).*

In fig 2, ***Wilson*** *illustrates providing a precoding means (18) at an input stage of an amplifier (DC coupled).*

7. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., placement of features serves to help avoid an inter-symbol interference problem) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

8. In response to applicant's argument that placement of an amplifier in a particular manner serves to help avoid an inter-symbol interference problem, instead of help to ensure an adequate signal at the input terminal of modulator, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

9. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Allowable Subject Matter

10. Claims 13 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record in previous actions and not relied upon is considered pertinent to applicant's disclosure.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 9:30am-9:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DWL
May 15, 2007

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600